# MODIS sensor Working Group (MsWG) Summary

**Attendance:** Suraiya Ahmad, Bill Barnes, Stuart Biggar, Vincent Chang, Roger Drake, Chris Moeller, Vince Salomonson, Junqiang Sun, Gary Toller, Jack Xiong, Eric Vermote, Zhengming Wan, Joe Esposito

## *Scheduled Items*

**Item 1.** Aqua MODIS L1B Code and LUTs

    Aqua code version issue

(JX)  PC bands (33,35,36) calibration when $T\_BB > T\_SAT$ (done!)

    Capability for time dependent RVS needs to be implemented. Algorithm defined in the January 30, 2002 MsWG meeting.  A small bug was fixed related to b1 initialization. There is no impact on the existing calibration.  Baseline for Aqua will be the same as for the current Terra with the following changes:

    - Small changes needed in the lookup table structure.

    - PC band saturation effect on $b_1$ during BB warmup/cooldown cycle will be handled as described at the January 30, 2002 MsWG meeting.

    - Telemetry coefficients, which are different for Terra and Aqua, are changed.

    LUTs contents

(JX)  First Aqua L1B code delivered to SDST.  Due to constraint at SDST, the version numbers for Terra and Aqua are interleaved.  This is due to the fact that version numbers must always be larger than the preceding version number at SDST.

**Item 2.** Terra MODIS L1B Code and LUT

    Time-dependent RVS capability

(JX)  Still need to add the Capability for time dependent RVS with coefficient interpolation methodology.

    Need to generate the time dependent RVS coefficients LUT

    Suggested corrections for next data re-process

(JX)  What is the delivery deadline for reprocessing?

(BB)  The delivery deadline is uncertain but it will probably be during the summer.

(JX)  Code changes need to be finished 3 weeks before delivery date in order to include testing.

    LUTs (see charts included)

(JX)  TEB: LUTs are all okay except for striping.

    RSB:

    1) Plot 1 in the handout depicts the current $m_1$ trending.  Ripples are apparent in the trending.

    Bands 8-16 use the solar diffuser screen.  The ripples can be attributed to residual vignetting due to the screen.  An algorithm using the open to closed ratio of bands 3, 4, 17-19 was developed on a calibration to calibration basis.  The open to closed ratio, averaged over these five bands, was used to empirically correct for residual vignetting rippling.  The results after correction are shown in the $2^{nd}$ plot.

2) Re-examining the entire $m_1$ calibration process, we have found that one of the coefficients in the BRF LUT (at 900nm) was incorrect. This explains the existing ripples in bands like 17, 18, and 19. Plot 2 shows the effect of applying both the empirical vignetting correction to Bands 8-16 and the revised BRF. The impact due to the revised BRF is roughly 1% offset at Band 17 and decreases as the band center wavelength moves from 900nm.

3) Forward and re-processing uses a linear $m_1$ trending. After day 600 the actual trending of $m_1$ gets flat (i.e. degradation stopped). This is seen on both MS1 and MS2. If we continue with the current linear $m_1$ values then as time increases, deviation of the smoothly fitted $m_1$ (currently in use) and the actual measured $m_1$.increases.

(BB) If Bob Evans has to deliver by 03/08/2002(?) then a change can be done for later re-processing. He would have to generate new (L2) sets after 03/08/2002(?).

(JX) Both the moon and SRCA data show the flattening independent of the diffuser.

(BB) Something in the optics stopped degrading.

(JX) The SDSM is following the same trend as before.

RECAP – There are three things to be done. Must wait to speak with Miami to make a change in $m_1$ time dependence due to the observed flatness.

(SB) Degradation using linear interpolation may not be adequate.

(JX) The degradation of the diffuser has been removed in the $m_1$ trending. The observed degradation is likely to be in the optics.

## *Around the Table*

**Participant:** Eric Vermote – Very difficult to correct band 7 by detector. Closed vs. open shows a gain difference.

(JX) Non-linearity in gain may cause this to occur. Detector gains with X-talk are amplitude dependent. The difference gets smaller after applying X-talk correction.

**Participant:** Roger Drake – Spacecraft due to ship to Vandenberg on 02/24/2002. The launch is still set for 04/18/2002.

(VS) Do you think the launch date will change?

(RD) There is no information on this, though there was no shortage of issues at the pre-ship review. SBRS also looked at the SRCA X-talk test in TV at the spacecraft level. We have learned several things. A) There is very little electronic Xtalk in FM1. The IAC is consistent with the SRCA. B) The response we get does not coincide with the band positions. We are seeing light leaks which are characterized in the aft optics assembly. This leakage is not seen on PFM. It seems to be due to the FM1 broadband blocking filters interface deposition and is not a direct electronic X-talk. MISR had the same effect for bumped filter edges and required a mask be placed on all joints between bands.

(JX) What is the percent effect you determined?

(RD) There is a peak at 1-1.5 frames between bands 6 and 7 which shows up as a 4% response effect.

(JX) MCST will check the data. MCST results also show the leakage at positions between the bands on PFM and FM1. Discussed this with Eric today. We see the X-talk is negative in PFM for Band 7.

**Participant:** Chris Moeller – have analyzed more granules for B26 study (day 2001155) Results are similar to those for day 153. Currently analyzing Dec. 2000 and continuing to look at more data sets.

**Participant:** Suraiya Ahmad – Re-processing is up to February 12, 2002 (2002043).